

Michigan



Introduction

This study linked data from the 2003 and 2005 administrations of Michigan's reading and math tests to the Northwest Evaluation Association's Measures of Academic Progress (MAP) assessment, a computerized adaptive test used in schools nationwide. We found that Michigan's definitions for proficiency in reading and mathematics are less difficult than the standards set by most of the other 25 other states in this study. In other words, Michigan's tests are well below average in terms of difficulty.

In addition, the level of difficulty of Michigan's tests decreased somewhat from 2003 to 2005—the No Child Left Behind era—although not in all grades. One finding of this study is that Michigan's standards are dramatically lower for third-grade students than for eighth-grade pupils (taking into account the differences in subject content and children's development). State policymakers might consider adjusting the standards to ensure equivalent difficulty at all grades so that elementary school students scoring at the proficient level are truly prepared for success later in their educational careers.

What We Studied: Michigan Educational Assessment Program (MEAP)

Michigan currently uses a fall assessment called the Michigan Educational Assessment Program (MEAP), which tests English/language arts and mathematics in grades 3 through 8, science in grades 5 and 8, and social studies in grades 6 and 9. The current study linked data from fall 2003 and fall 2005 administrations to a common scale also administered in the 2003 and 2005 school years. To determine the difficulty of Michigan's proficiency cut scores, we linked data from Michigan's tests to the NWEA assessment. (A "proficiency cut score" is the score a student must achieve in order to be considered "proficient.") This was done by analyzing the reading and math results of a group of elementary and middle schools in which almost all students took both the state's assessment and the NWEA test. (The methodology section of this report explains how performance on these two tests was compared.)

Part 1: How Difficult are Michigan's Definitions of Proficiency in Reading and Math?

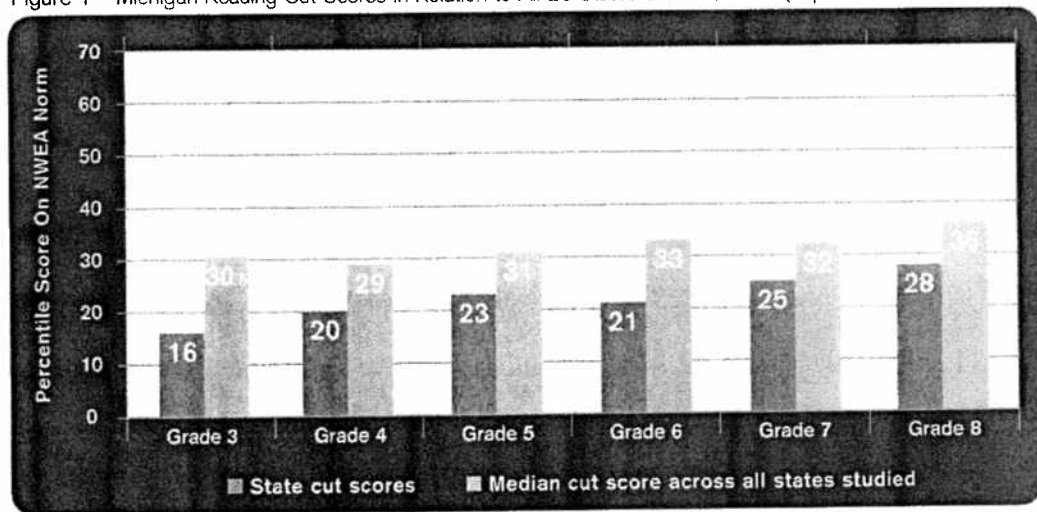
One way to evaluate the difficulty of a standard is to determine how many people attempting to attain it are likely to succeed. How do we know that a two-foot high bar is easy to jump over? We know because, if we asked 100 people at random to attempt such a jump, perhaps 80 percent would make it. How do we know that a six-foot high bar is challenging? Because only one (or perhaps none) of those same 100 individuals would successfully meet that challenge. The same principle can be applied to academic standards. Common sense tells us that it is more difficult for students to solve algebraic equations with two unknown variables than it is for them to solve an equation with only one unknown variable. But we can figure out exactly how much more difficult by seeing how many eighth graders nationwide answer both types of questions correctly.

Applying that approach to this task, we evaluated the difficulty of Michigan's proficiency standards by estimating the proportion of students in NWEA's national norm group who would perform above the Michigan standard on a test of equivalent difficulty. The following two figures show the difficulty of Michigan's proficiency standards for reading (Figure 1) and mathematics (Figure 2) in 2005 in relation to the median of all the states in the study. The proficiency cut scores for **reading** in Michigan ranged between the 16th and 28th percentiles for the norm group, with the eighth-grade cut score being most challenging. In **mathematics**, the proficiency cut scores ranged between the 6th and 35th percentiles, with seventh grade being most challenging.

Figures 1 and 2 show us that Michigan's cut scores in both reading and mathematics are consistently less difficult than the median standards of the other states in the study and well below the capabilities of the average student within the NWEA norm group.

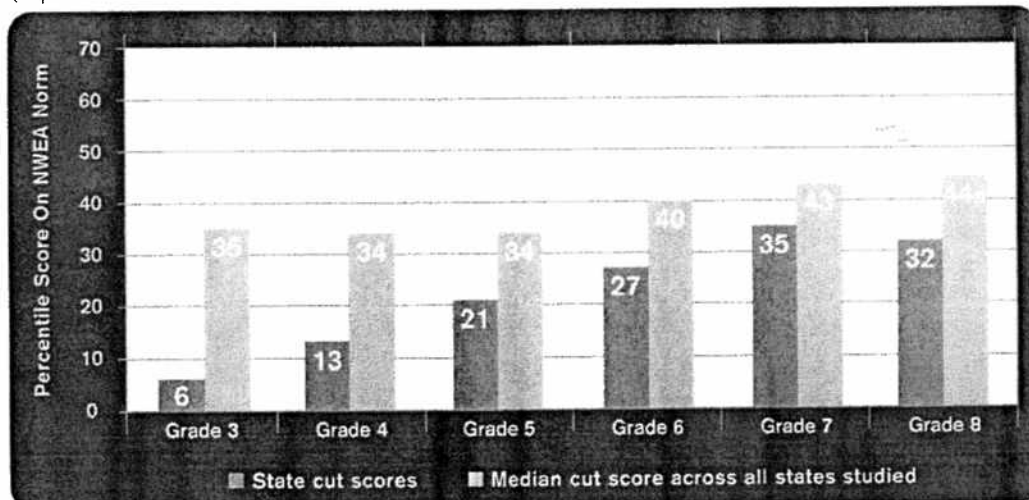
Another way of assessing difficulty is to evaluate how Michigan's proficiency cut scores rank relative to other 25 states within the study. Table 1 shows that the Michigan standards generally rank among the lowest in terms of difficulty.

Figure 1 – Michigan Reading Cut Scores in Relation to All 26 States Studied, 2005 (Expressed in MAP Percentile)



Note: This figure compares reading test cut scores ("proficiency passing scores") as percentiles of the NWEA norm. These percentiles are compared with the median cut scores of all 26 states reviewed in this study. Michigan's reading cut scores are consistently 7 to 14.5 percentiles below the median.

Figure 2 – Michigan Mathematics Cut Scores in Relation to All 26 States Studied, 2005
(Expressed in MAP Percentile)



Note: Michigan's math test cut scores are shown as percentiles of the NWEA norm and compared with the median cut scores of all 26 states reviewed in this study. Michigan's cut scores are consistently below the median, particularly in the early years, when the math cut score is as much as 29 percentiles below the median.

Table 1 – Michigan Reading and Mathematics Standards for Proficient Performance, 2005

	Ranking (Out of 26 States)					
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Reading	21	22	20	22	21	20
Mathematics	24	24	23	21	21	19

Note: This table ranks Michigan's cut scores relative to the cut scores of the other 25 states in the study, with 1 being highest and 26 lowest.

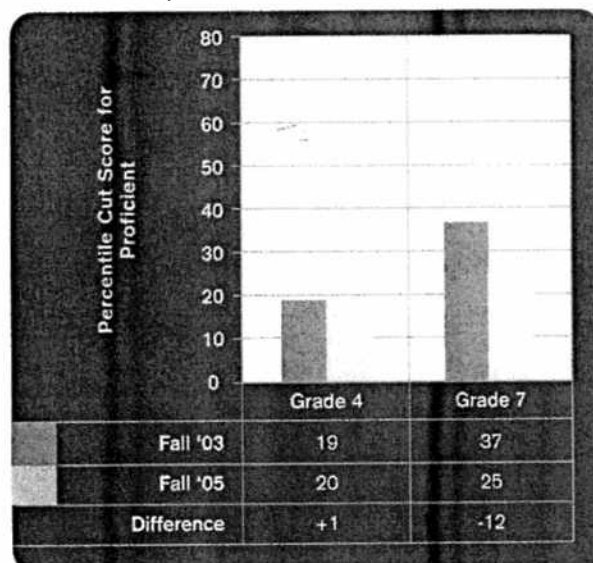
Part 2: Differences in Cut Scores over Time

In order to measure their consistency, Michigan's proficiency cut scores were mapped to their equivalent scores on NWEA's MAP assessment for the 2003 and 2005 school years. Cut score estimates for both years were available for grades four and seven in reading, and for grades four and eight in mathematics.

States may periodically re-adjust the cut scores they use to define proficiency in reading and math or may update the tests used to test student proficiency. Such changes can impact proficiency ratings, not necessarily because student performance has changed, but because the measurements and criteria for success have changed. In Michigan's case, the state adopted a new scale and new cut scores effective for the fall 2005 testing season.

Is it possible, then, to compare the proficiency scores between earlier administrations of Michigan tests and today's? Yes. Assume that we're judging a group of fourth graders on their high-jump prowess and we measure this by finding how many in that group can successfully clear a three-foot bar. Now assume that we change the measure and set a new height. Perhaps students must now clear a bar set at one meter. This is somewhat akin to adjusting or changing a state test and its proficiency requirements. Despite this, it is still possible to determine whether it is more difficult to clear one meter than three feet, because we know the relationship between the measures. MEAP in 2003 and MEAP in 2005 can both be linked to the MAP, which has remained consistent over time. Just as one can compare three feet to one meter and know that a one-meter jump is slightly more difficult than a three-foot jump, one can estimate the cut score needed to pass the MEAP in 2003 and 2005 on the MAP scale and ascertain whether the test may have changed in difficulty.

Figure 3 – Estimated Difference in Michigan's Proficiency Cut Scores in Reading, 2003-2005.



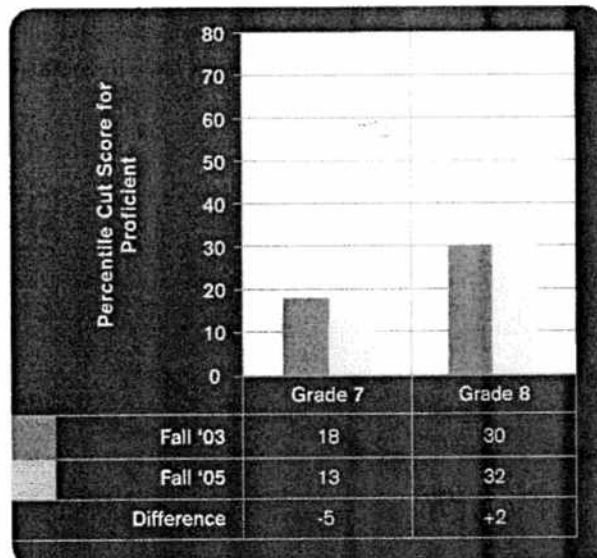
Note: This graphic shows how the difficulty of achieving proficiency in reading has changed. For example, seventh-grade students in 2003 had to score at the 37th percentile of the NWEA norm in order to be considered proficient, while in 2005 seventh graders had only to score at the 25th percentile to achieve proficiency. The change in grade 4 was within the margin of error (in other words, too small to be considered substantive).

In **reading**, there was no substantive change in the estimated fourth-grade standard over the two-year period, but a large decrease in the seventh-grade standard (see Figure 3). Consequently, even if student performance stayed the same on an equivalent test like NWEA's MAP assessment, one would expect the seventh-grade reading proficiency rate in 2005 to rise by about 12 percent over the 2003 level simply because of the easier standard. (Michigan reported a 15-point gain for seventh graders over this period.)

Michigan's estimated **mathematics** cut scores showed the reverse pattern, with a moderate decrease in the fourth-grade standard and essentially no change in the eighth-grade standard (see Figure 4). Consequently, even if student performance stayed the same on an equivalent test like NWEA's MAP assessment, the less difficult fourth-grade standard in 2005 would elicit a proficiency rating that was five percent higher than the 2003 level. (Michigan reported a 17-point gain for fourth graders over this period.)

Thus, one could fairly say that Michigan's seventh-grade reading and fourth-grade math tests were easier to pass in 2005 than in 2003, but the tests in the other observed grades remained about the same. As a result, state-reported gains in fourth-grade math and seventh-grade reading proficiency rates during this period may not be entirely a product of improved achievement.

Figure 4 – Estimated Differences in Michigan's Proficiency Cut Scores in Mathematics, 2003-2005 (Expressed in MAP Percentiles)



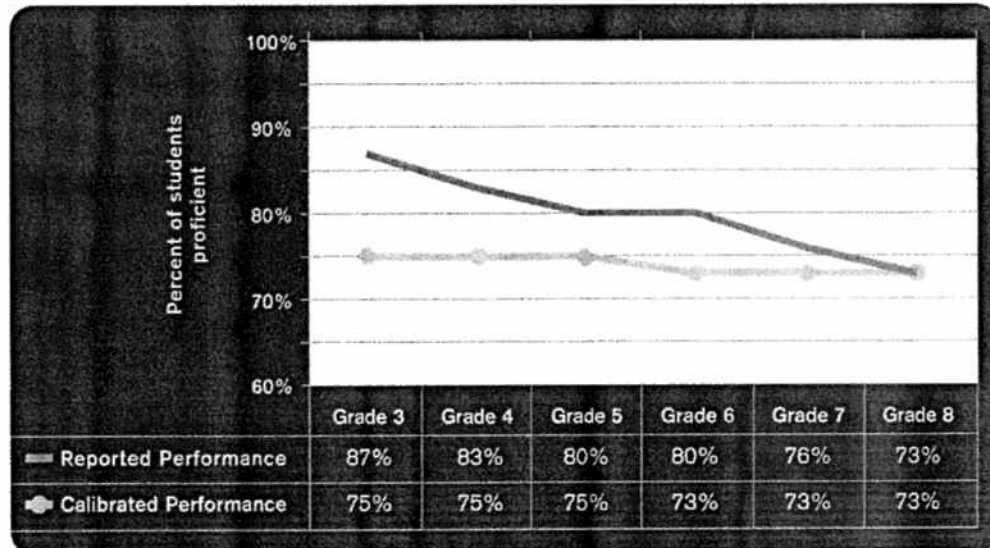
Note: This graphic shows how the difficulty of achieving proficiency in math has changed. For example, fourth-grade students in 2003 had to score at the 18th percentile nationally in order to be considered proficient, while in 2005, fourth graders only had to score at the 13th percentile to achieve proficiency. The change in grade 8 was within the margin of error (in other words, too small to be considered substantive).

Part 3: Calibration across Grades

Calibrated proficiency cut scores are those that are relatively equal in difficulty across all grades. Thus, an eighth-grade cut score would be no more or less difficult for eighth graders to achieve than a third-grade cut score is for third graders. When cut scores are so calibrated, parents and educators have some assurance that achieving the third-grade proficiency cut score puts a student on track to achieve the standards at eighth grade. It also provides assurance to the public that reported differences in performance across grades are a product of differences in actual educational attainment and not simply differences in the difficulty of the test.

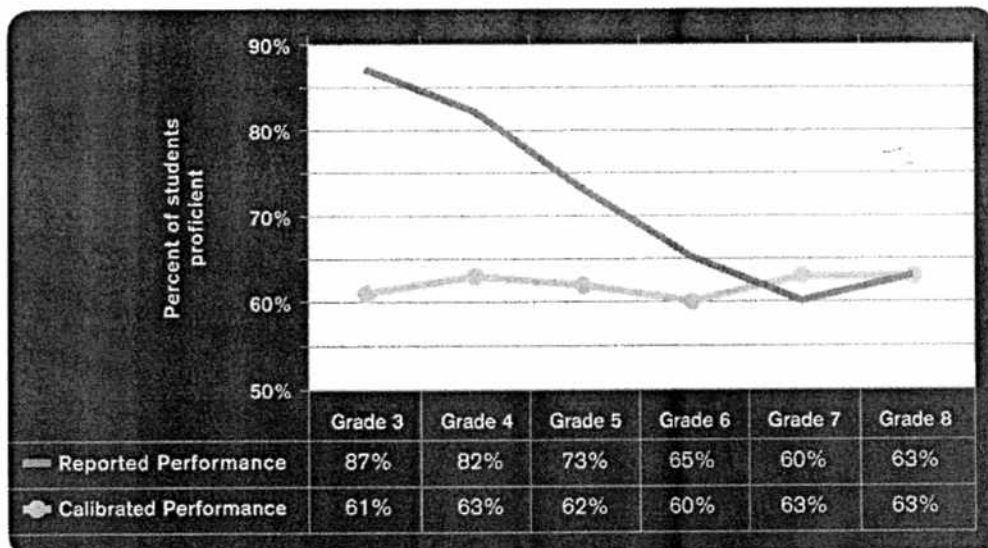
Examining Michigan's cut scores, we find that they are not well calibrated across grades. Figures 1 and 2 above showed that Michigan's upper-grade cut scores in reading and mathematics were generally more challenging than the standards in the lower grades. The two figures that follow show Michigan's reported performance on its state test in reading (Figure 5) and mathematics (Figure 6) compared with the rates of proficiency that would be achieved if the cut scores were all calibrated to the grade-8 standard. When differences in grade-to-grade difficulty of the standard are removed, student performance is much more consistent across grades. This would lead to the conclusion that the higher rates of proficiency that the state has reported for lower grades students are somewhat misleading.

Figure 5 – Michigan Reading Performance as Reported and as Calibrated to the Grade-8 Standard, 2005



Note: This graphic shows, for example, that if Michigan's grade-3 reading standard were set at the same level of difficulty as its grade-8 standard, 75 percent of third graders would achieve the proficient level, rather than 87 percent, as was reported by the state.

Figure 6 – Michigan Mathematics Performance as Reported and as Calibrated to the Grade-8 Standard, 2005



Note: This graphic shows, for example, that if Michigan's grade-3 mathematics standard were set at the same level of difficulty as its grade-8 standard, 61 percent of third graders would achieve the proficient level, rather than 87 percent, as was reported by the state.

Policy Implications

When setting its cut scores for what it takes for a student to be considered proficient in reading and math, Michigan is low compared to the other 25 states in this study. (This finding is consistent with the recent National Center for Education Statistics report, *Mapping 2005 State Proficiency Standards Onto the NAEP Scales*, which also found Michigan standards to be in the bottom half or bottom third of the distribution of all states studied for mathematics.) From 2003 to 2005, its reading and mathematics proficiency standards have declined somewhat, though not for all grades. In addition, Michigan's

expectations are not smoothly calibrated across grades; students who are proficient in third grade are not necessarily on track to be proficient by the eighth grade. Michigan policymakers might consider adjusting their standards across the board but especially in the earlier grades, so that parents and schools can be assured that young students scoring at the proficient level are truly prepared for success later in their educational careers.